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New method of diagnostics and surgical correction of hypo and a vitaminos "C"

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Introduction

Ascorbic acid is an indispensable participant in most metabolic processes.[1] It passively absorbed in the intestine (diffusion, osmosis) par with water and chlorides, but it is possible, and active transport of vitamin analogously glucose transport.[2] When insolvency bauginievoy flap (NBZ) and the development of the syndrome of excessive microbial colonization of the intestinal absorptive function suffers from the latter, in particular developing beriberi "C".

One of the objective and accessible screening methods for determining the deficiency of the vitamin "C" was the setting of a canal test for the resistance of capillaries.[3] The occurrence of petechial rash after this test allowed to judge the presence and extent of hypovitaminosis. The appearance of petechiae, their size and shape are determined by the degree of "vulnerability" to the wall of the capillaries of the dermis.[4] In the body there is a strong direct positive relationship between the degree of strength of capillaries and the level of vitamin "C" in the blood.[5] We have proposed a method for determining the C-vitamin status of the apparatus by a capillaryresistometer. The principle of the device is as follows. When creating a negative pressure inside a special nozzle applied to the skin of the forearm, petechia of different size and shape appear. The size and shape determined by the degree of petechiae "vulnerability" capillary walls of the reticular dermis, which in turn is closely related to the level of vitamin "C" in the blood.

Objective to create an apparatus for determining kapillyarorezistometr "C" state-vitamin in an insolvency bauginievoy valve patients and after the correction.

Materials and methods

We developed the instrument (RF patent for utility model number 87889 "Kapillyarorezistometr" from 19.01.2009) consists of the following elements forming a closed environment at work: a metal cap on the skin; differential pressure gauge; discharge system. At the same time, the characteristics of the nozzle correspond to the characteristics of the glass jar (the inner diameter of the funnel is 15.8mm), which makes it possible to apply standard data (Table 1) to evaluate the results obtained.

The electronic manometer "Testo 506", manufactured in Germany, certificate No. 23187, registration number 177270-06 is used as a differential pressure gauge, the measuring range is +/- 2 atm. The gauge displays the load cell readings in 6measuring units (mm Hg, mm Hg, Atm, Pa, etc.). The manometer by means of plastic tubes is connected through a tee to the system, followed by measuring the pressure during the sample. As a discharge system, the Janet syringe and the holding rod are used to maintain a constant level of vacuum in the system. The general view of the device and its functional elements is shown in Figure1.

The capillary resisto meter is used as follows: when a metal nozzle is applied to the inner surface of the upper third of the patient's forearm, the air is sucked from the closed system of the instrument tubes using a syringe. The degree of discharge is controlled by an electronic differential pressure gauge. When the desired pressure is reached in the system (240mm Hg), a clamp is placed on the tube connecting the nozzle and the syringe. It lasts 3minutes. When the system is accidentally depressurized (as evidenced by the change in pressure), the nozzle is applied to the skin of the system again. After expiration of the exposure, the discharge stops, the device is removed from the patient's skin. The result is recorded and its subsequent evaluation (Table 1).

i. To objectify the data obtained and their estimated results, we proposed a processing algorithm that implies: Conducting a sample with a capillaryresistometer (Figure 1) (Figure 2A) (Figure 2B);

ii. Morometry of the obtained petechiae with the help of the Image Tool v. 3.0 (Figure 3).

iii. Statistical processing of the obtained results of morphometry.

Table 1 Evaluation of the results of a can sample

Index	Degree of strength of capillaries	Condition of C-vitamin nutrition
Up to 15 small hemorrhages	1	Normal
15-30 small and medium hemorrhages	2	Pre- and gipovitaminoznoe
From 30 and more small, medium and large hemorrhages to a continuous draining hemorrhage	3	Hypo-and beriberi

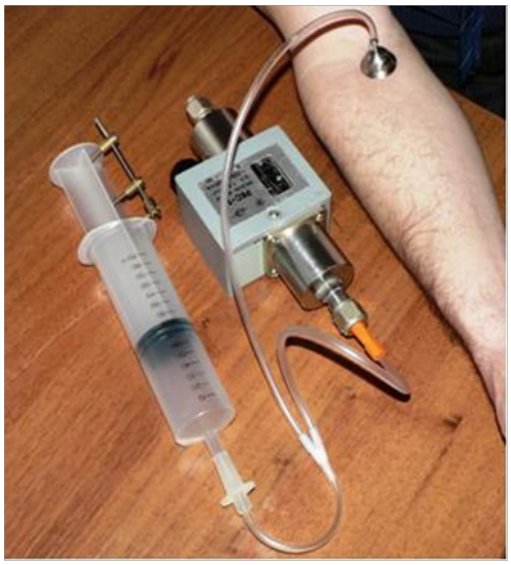

Figure 1 Conducting a sample with a capillaryresistometer.

Figure 2 The result of the sample: a - the appearance of skin patch; b - petechiae with increasing (x15).

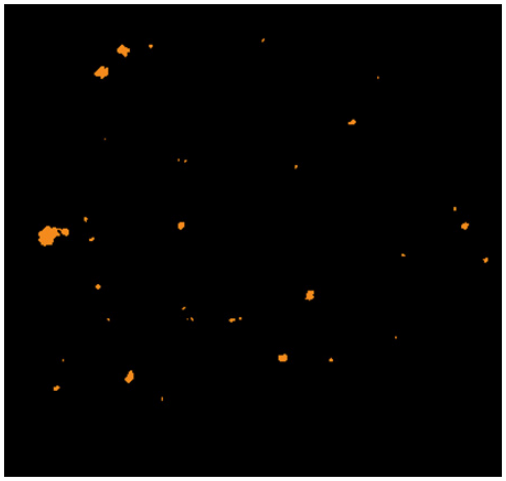

Figure 3 Petechia morphometry using the Image Tool v. 3.0 (final): the result of computer processing of the image of petechiae.

Results

We conducted tests for the resistance of capillaries using the developed instrument and the scheme in 30 patients with a proven NCD. All of them had hypovitaminosis "C", and in 17 patients the severity of hypovitaminosis "C" was assessed as moderate and severe. We also studied the "C" -worm status in 14 patients in the long-term (1 to 2years) after the buginoplasty. In 9 patients, hypovitaminosis was absent, in 5 patients had mild severity.

Conclusion

i. C-vitamin deficiency plays an important role in NCD, causing the manifestation of secondary associated conditions, such as exacerbation of reflux disease, peptic ulcer, IBS, vegetative-vascular disorders, bronchial asthma, dermatoses, and increased bleeding syndrome.

ii. The first results obtained suggest that the operation of the bauginoplasty, being radical with respect to the functional and anatomical insufficiency of the bauhinium damper, has a positive effect on the "C" -the patient's vitamin status.

Acknowledgements

None.

Conflict of interest

Author declares that there is no conflict of interest.

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